

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1-34. (Cancelled)

35. (Currently Amended) A piano hinge defining a hinge line, the piano hinge comprising a two-way shape memory alloy (SMA) positioned along the hinge line to form a pin that at least partially twists when the two-way SMA pin changes between an austenite temperature and a martensite temperature, hinge leafs defining a passage into which the two-way SMA pin fits, and a key-spline arrangement rigidly securing the two-way SMA pin to the hinge leafs for transfer of torque from the two-way SMA pin to one of the hinge leafs relative to the other of said hinge leafs.

36. (Currently Amended) The piano hinge of claim 35, wherein the further comprising hinge leafs include having alignable knuckles that [[to]] define the passage into which the two-way SMA pin fits, ~~and a key-spline arrangement for transfer of torque from the two-way SMA to the appropriate leaf.~~

37. (Previously Presented) The piano hinge of claim 35, wherein the two-way SMA is configured to apply torque within a range of about 27 inch pounds and about 1740 inch pounds.

38. (Previously Presented) The piano hinge of claim 35, wherein the two-way SMA is configured to apply torque within a range of about 27 inch pounds and about 1010 inch pounds.

39. (Previously Presented) The piano hinge of claim 35, wherein the two-way SMA is configured to apply torque within a range of about 1010 inch pounds and 1740 inch pounds.

40. (Previously Presented) The piano hinge of claim 35, wherein the two-way SMA is configured to apply torque at about 1740 inch pounds.

41. (New) A piano hinge comprising first and second hinge leafs having alignable knuckles that define a passage into which a hinge pin fits, a two-way shape memory alloy (SMA) hinge pin at least partially disposed within the passage defined by the knuckles, the two-way SMA hinge pin having at least a first tab rigidly secured to the first hinge leaf and at least a second tab rigidly secured to the second hinge leaf, wherein the two-way SMA hinge pin at least partially twists when the two-way SMA pin changes between an austenite temperature and a martensite temperature, such that torque from the two-way SMA pin is transferred to one of the hinge leafs relative to the other of said hinge leafs.

42. (New) The piano hinge of claim 41, wherein the first tab is at one end portion of the two-way SMA hinge pin and the second tab is at the other end portion of the two-way SMA hinge pin, such that the partial twisting of the hinge pin applies a torque to the first tab relative to the second tab.

43. (New) The piano hinge of claim 42, wherein the hinge pin rotates into an intermediate partially twisted configuration when a temperature of the two-way SMA is between the austenite temperature and the martensite temperature.

44. (New) The piano hinge of claim 43, wherein the two-way SMA is configured to apply torque within a range of about 27 inch pounds and about 1740 inch pounds.

45. (New) The hinge apparatus of claim 43, further comprising a device to cause the hinge pin to heat and switch the two-way SMA between at a first trained shape and a second trained shape.